

APPLICATION FOR UNITED STATES PATENT

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Invention: SHOTGUN CHOKE WITH INTEGRAL WAD-STOPPING  
FEATURE

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### CROSS-REFERENCE TO RELATED APPLICATIONS

The present application derives priority from U.S. Provisional Patent Application  
10 Serial No. 60/454,368 filed March 12, 2003

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

15 This invention relates to shotgun chokes and, more particularly, to a choke  
(barrel) reducer which constrains the shot pattern of pellets fired by a shotgun, and  
which additionally slows the wad down so that it will not follow behind the shot.

#### 2. Description of the Background

20 It is well-known that choke devices can be used to tighten the shot pattern of  
pellets fired by a shotgun. A choke is a removable interior tube at the end of the  
shotgun barrel that constricts shot dispersion. Choke tubes typically come in various  
configurations and can produce either a very wide shot dispersion, or a much tighter  
shot pattern. Different chokes are used for skeet, trap, and sporting clays, and hunting.

25 Typically, shotguns are now provided with a barrel whose muzzle has interior  
threads. This allows an appropriately made choke to be threaded onto the end of the  
barrel. This also allows the owner to interchange chokes so he can select his desired  
shot pattern.

5           A conventional shotgun shell also includes wadding in which the shot is encased.  
When the shotgun is fired, the wadding follows it up the barrel (actually propelling the  
shot until both leave the barrel). When the wadding is ejected it affects the shot pattern,  
often resulting in a wider pattern than desired. There are no existing choke designs that  
inherently prevent this. There are, however, "wad-stoppers" to slow the wad as it  
10 moves outward from the barrel, thereby separating it from the pellets and minimizing its  
effect on the shot pattern. For example, United States Patent No. 6,128,846 to Walker  
et al. issued October 10, 2000 shows a shotgun choke tube with radial projections that  
engage and retard a wad/cup exiting the barrel. However, the projections are only  
operative on a plastic wad cup which carries the pellets, and such wad cups are  
15 typically used only in a portion of modern shotgun shells.

It would be greatly advantageous to provide a choke with integral wad stopping  
feature to serve both purposes, controlling the shot pattern and as well stopping the  
wad as it moves outward from the barrel, thereby separating it from the pellets and  
minimizing its effect on the shot pattern, regardless of whether the wadding is fabric,  
20 cardboard, or plastic shot cups.

5           SUMMARY OF THE INVENTION

It is, therefore, the primary object of the present invention to provide an improved choke design for a shotgun choke with integral wad-stopping feature operative on fabric or cardboard wadding, plastic shot cups, or otherwise.

It is another object to provide a choke that can be screw-attached to the muzzle  
10 end of a shotgun, the choke having an integral wad stopper to stop the wad as it moves outward from the barrel, thereby rapidly separating it from the pellets and minimizing its effect on the shot pattern.

These and other objects are accomplished by a shotgun choke with integral wad-  
stopping feature for use with an existing shotgun. The choke generally comprises a  
15 hollow cylinder having a coupling at one end for attaching it to the muzzle such as an external series of screw threads for screw-insertion to the muzzle end of an existing shotgun, a raised and textured opposing end for gripping and to act as an insertion stop against the shotgun barrel, and an internal channel defined by an overall taper running from the inserted end to the output end to constrict shotgun pellets passing there  
20 through. The wad-stopping feature is accomplished with a plurality of annular steps spaced along the tapered interior. The steps further comprise a series of raised annular internal projections, raised from the internal walls of the channel. The projections may take the form of circular steps or lands, or a pattern of individual projections being (equally) optimally spaced throughout the tapered channel to catch

5 and separate a traveling wad from the shot when passing there through while assuring  
wad expulsion. The general taper accomplishes the purpose of constricting the shot  
pattern, while the stepped configuration along the taper retards the wad.

The present invention's design is simple and straightforward, highly effective,  
can be economically manufactured, and there is no wasted material in the production  
10 process.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Other objects, features, and advantages of the present invention will become  
more apparent from the following detailed description of the preferred embodiments  
15 and certain modifications thereof when taken together with the accompanying drawings  
in which:

FIG. 1 is a side perspective view of the choke 2 with integral wad stopper  
according to the present invention.

FIG. 2 is a side cross-section of the choke 2 with integral wad stopper as in FIG.

20 1.

FIG. 3 is an end view of the choke 2 with integral wad stopper as in FIGs. 1-2.

5 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 is a side perspective view of the choke 2 with integral wad stopper according to the present invention. The choke 2 generally comprises a hollow cylindrical section of machined stainless steel of approximately 3" length and having a coupling (a series of screw threads 10) proximate one end for attachment such as by screw-insertion to the muzzle end of an existing shotgun. A raised textured section 12 acts as an insertion-stop within the shotgun barrel and also provides a better finger grip for insertion. When installed, the shot pellets pass through an inner channel 20 of the choke 2.

FIG. 2 is a side cross-section of the choke 2 with integral wad stopper as in FIG. 1, and FIG. 3 is an end view of the choke 2.

. As with conventional chokes, the inner channel 20 is tapered slightly to constrict the pellets passing there through in order to control the shot pattern. As an example, for one of the popular model shotguns, the 12 gage, the taper runs from approximately a 7/10" diameter at the input end to an approximate 13/20" diameter 1/10" inside the input end, although the degree and length of taper may be varied to accomplish a given shot pattern. Other bore diameter barrels require appropriate sizing with similar patters. The taper may be confined to a section of the channel 20 or may be formed as an overall taper running from the input end to the output end.

5           In accordance with the dual-purpose of the present invention, an integral wad-stopping feature is accomplished by forming a pattern of annular steps from the input end through approximately  $\frac{2}{3}$  the length of the choke 2, the steps serving to catch and rapidly retard the wad following the shot. More specifically, a first step 30a is located approximately  $\frac{1}{10}$ " inside the input end, a second step 30b is located approximately  
10    $\frac{5}{10}$ " inside the input end, a third step 30c is located approximately  $\frac{9}{10}$ " inside the input end, a fourth step 30d is located approximately  $1 \text{ and } \frac{3}{10}$ " inside the input end, and a fifth step 30e is located approximately  $1 \text{ and } \frac{7}{10}$ " inside the input end. Each of the steps 30a-e are raised approximately 0.004" (.1mm), and the raised lip of each inward step-projection catches and progressively retards the traveling wad to separate it  
15   from the shot. In this regard, the raised lip of each inward step-projection 30a-e may be formed with a sharp or rounded edge for various degrees of wad retardation. The transition between each internal step 30a-e along said cylinder may be horizontal (the steps themselves defining a progressively smaller internal diameter within said cylinder), or the transitions may be ramped between successive internal steps to  
20   contribute to the overall taper.

          In use, the hunter screw-attaches the choke 2 to the muzzle end of a shotgun by insertion of the receiving end into the barrel and by screw-threading threads 10 therein to fix the choke 2 in place. Upon firing the shotgun, the taper of the inner channel 20 constricts the pellets passing there through in order to control the shot pattern, and the

5     integral wad stopper comprising steps 30a-e dramatically retards the wad as it moves  
outward from the barrel, thereby separating it from the pellets and minimizing its effect  
on the shot pattern.

      The choke 2 according to the present invention is operative on fabric or  
cardboard wadding, plastic shot cups, or most other forms of wadding, it can be easily  
10    screw-attached to the muzzle end of a shotgun, and has been found to provide a highly  
accurate and tightly controlled shot pattern by virtue of the combined taper with integral  
progressive wad stopper to stop the and minimize its effect on the shot pattern.

      Having now fully set forth the preferred embodiment and certain modifications of  
the concept underlying the present invention, various other embodiments as well as  
15    certain variations and modifications of the embodiments herein shown and described  
will obviously occur to those skilled in the art upon becoming familiar with said  
underlying concept. For example, the projections need not be annular, but alternatively  
may be connected along a spiral pattern.

      It is to be understood, therefore, that the invention may be practiced otherwise  
20    than as specifically set forth in the appended claims.